

M80676490.ST25
SEQUENCE LISTING

<110> Agriculture Victoria Services Pty Ltd
AgResearch Limited

<120> Manipulation of condensed tannin biosynthesis

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<151> 2003-04-14

<150> 2003904369
<151> 2003-08-14

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<170> PatentIn version 3.2

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M80676490.ST25

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M80676490.ST25

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Ser Ala Ala Gln Thr Ile Leu Pro Asp Ser Asp Gly Ala Ile Asp Gly
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His Leu Arg Glu Val Gly Leu Thr Phe His Leu Leu Lys Asp Val Pro
 Page 10

M80676490.ST25
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260

270

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M80676490.ST25

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Gly Tyr Ala Val Asn Thr Thr Val Arg Asp Pro Asp Ser Pro Lys Lys
 35 40 45

Ile Ser His Leu Val Ala Leu Gln Ser Leu Gly Glu Leu Asn Leu Phe
 50 55 60

Arg Ala Asp Leu Thr Val Glu Glu Asp Phe Asp Ala Pro Ile Ala Gly
 65 70 75 80

Cys Glu Leu Val Phe Gln Leu Ala Thr Pro Val Asn Phe Ala Ser Gln
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Asp Pro Glu Asn Asp Met Ile Lys Pro Ala Ile Lys Gly Val Leu Asn
 100 105 110

Val Leu Lys Ala Ile Ala Arg Ala Lys Glu Val Lys Arg Val Ile Leu
 115 120 125

Thr Ser Ser Ala Ala Ala Val Thr Ile Asn Glu Leu Lys Gly Thr Gly
 130 135 140

His Val Met Asp Glu Thr Asn Trp Ser Asp Val Glu Phe Leu Asn Thr
 145 150 155 160

Ala Lys Pro Pro Thr Trp Gly Tyr Pro Ala Ser Lys Met Leu Ala Glu
 165 170 175

M80676490.ST25

Lys Ala Ala Trp Lys Phe Ala Glu Glu Asn Asp Ile Asp Leu Ile Thr
 180 185 190

Val Ile Pro Ser Leu Thr Thr Gly Pro Ser Leu Thr Pro Asp Ile Pro
 195 200 205

Ser Ser Val Gly Leu Ala Met Ser Leu Ile Thr Gly Asn Asp Phe Leu
 210 215 220

Ile Asn Ala Leu Lys Gly Met Gln Phe Leu Ser Gly Ser Leu Ser Ile
 225 230 235 240

Thr His Val Glu Asp Ile Cys Arg Ala His Ile Phe Leu Ala Glu Lys
 245 250 255

Glu Ser Ala Ser Gly Arg Tyr Ile Cys Cys Ala His Asn Thr Ser Val
 260 265 270

Pro Glu Leu Ala Lys Phe Leu Asn Lys Arg Tyr Pro Gln Tyr Lys Val
 275 280 285

Pro Thr Glu Phe Asp Asp Cys Pro Ser Lys Ala Lys Leu Ile Ile Ser
 290 295 300

Ser Glu Lys Leu Ile Lys Glu Gly Phe Ser Phe Lys His Gly Ile Ala
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Glu Thr Phe Asp Gln Thr Val Glu Tyr Phe Lys Thr Lys Gly Ala Leu
 325 330 335

Lys Asn

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 <213> Trifolium repens

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M80676490.ST25

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35 40 45

Pro Gly Pro Leu Leu Ser Ser Lys Ala Ala Thr Ile Lys Ala Phe Gln
50 55 60

Glu Lys Gly Ala Ile Val Ile Tyr Gly Arg Val Asn Asn Lys Glu Phe
65 70 75 80

Met Glu Met Ile Leu Lys Lys Tyr Glu Ile Asn Val Val Ile Ser Ala
85 90 95

Ile Gly Gly Ser Asp Gly Leu Leu Glu Gln Leu Thr Leu Val Glu Ala
100 105 110

Met Lys Ser Ile Asn Thr Ile Lys Arg Phe Leu Pro Ser Glu Phe Gly
Page 14

M80676490.ST25

115

120

125

His Asp Val Asp Arg Ala Asn Pro Val Glu Pro Gly Leu Thr Met Tyr
 130 135 140

Lys Gln Lys Arg Leu Val Arg Arg Val Ile Glu Glu Ser Gly Ile Pro
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Tyr Thr Tyr Ile Cys Cys Asn Ser Ile Ala Ser Trp Pro Tyr Tyr Asp
 165 170 175

Asn Cys His Pro Ser Gln Leu Pro Pro Pro Leu Asp Gln Leu His Ile
 180 185 190

Tyr Gly His Gly Asp Val Lys Ala Tyr Phe Val Asp Gly Tyr Asp Ile
 195 200 205

Gly Lys Phe Thr Met Lys Val Ile Asp Asp Glu Arg Thr Ile Asn Lys
 210 215 220

Asn Val His Phe Arg Pro Ser Asn Asn Cys Tyr Ser Met Asn Glu Leu
 225 230 235 240

Ala Ser Leu Trp Glu Asn Lys Ile Ala Arg Lys Ile Pro Arg Val Ile
 245 250 255

Val Ser Glu Asp Asp Leu Leu Ala Ile Ala Ala Glu Asn Cys Ile Pro
 260 265 270

Glu Ser Val Val Ala Pro Ile Thr His Asp Ile Phe Ile Asn Gly Cys
 275 280 285

Gln Val Asn Phe Lys Ile Asp Gly Ile His Asp Val Glu Ile Gly Thr
 290 295 300

Leu Tyr Pro Gly Glu Ser Val Arg Ser Leu Glu Glu Cys Tyr Glu Lys
 305 310 315 320

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<213> Trifolium repens

M80676490.ST25

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M80676490.ST25

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 Pro Gly Pro Leu Leu Ser Ser Lys Ala Ala Thr Ile Lys Ala Phe Gln
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 Glu Lys Gly Ala Ile Val Ile Tyr Gly Arg Val Asn Asn Lys Glu Phe
 65 70 75 80
 Met Glu Met Ile Leu Lys Lys Tyr Glu Ile Asn Val Val Ile Ser Ala
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 Ile Gly Gly Ser Asp Gly Leu Leu Glu Gln Leu Thr Leu Val Glu Ala
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 Met Lys Ser Ile Asn Thr Ile Lys Arg Phe Leu Pro Ser Glu Phe Gly
 115 120 125
 His Asp Val Asp Arg Ala Asn Pro Val Glu Pro Gly Leu Thr Met Tyr
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 Lys Gln Lys Arg Leu Val Arg Arg Val Ile Glu Glu Ser Gly Val Pro
 145 150 155 160
 Tyr Thr Tyr Ile Cys Cys Asn Ser Ile Ala Ser Trp Pro Tyr Tyr Asp
 165 170 175
 Asn Cys His Pro Ser Gln Leu Pro Pro Pro Leu Asp Gln Leu His Ile
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 Tyr Gly His Gly Asp Val Lys Ala Tyr Phe Val Asp Gly Tyr Asp Ile
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 Gly Lys Phe Thr Met Lys Val Ile Asp Asp Glu Arg Thr Ile Asn Lys
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 Asn Val His Phe Arg Pro Ser Asn Asn Cys Tyr Ser Met Asn Glu Leu
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 Ala Ser Leu Trp Glu Asn Lys Ile Ala Arg Lys Ile Pro Arg Val Ile
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 Val Ser Glu Asp Asp Leu Leu Ala Ile Ala Ala Glu Asn Cys Ile Pro
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 Glu Ser Val Val Ala Ser Ile Thr His Asp Ile Phe Ile Asn Gly Cys
 275 280 285
 Gln Val Asn Phe Lys Val Asp Gly Ile His Asp Val Glu Ile Gly Thr
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M80676490.ST25

Leu Tyr Pro Gly Glu Ser Val Arg Ser Leu Glu Glu Cys Tyr Glu Lys
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Thr Ala Ser Cys
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 aaaaaaaaaa aaaaaaaaaa aaagtactct gcgttggttac cactgcttaa tcactagtga 1380

M80676490.ST25

attc

1384

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Thr Glu Ala Ser Leu Ser Thr Thr His Pro Thr Tyr Leu Leu Val Arg
 35 40 45

Pro Gly Pro Leu Leu Ser Ser Lys Ala Ala Thr Ile Lys Ala Phe Gln
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Glu Lys Gly Ala Ile Val Ile Tyr Gly Arg Val Asn Asn Lys Glu Phe
 65 70 75 80

Met Glu Met Ile Leu Lys Lys Tyr Glu Ile Asn Val Val Ile Ser Ala
 85 90 95

Ile Gly Gly Ser Asp Gly Leu Leu Glu Gln Leu Thr Leu Val Glu Ala
 100 105 110

Met Lys Ser Ile Asn Thr Ile Lys Arg Phe Leu Pro Ser Glu Phe Gly
 115 120 125

His Asp Val Asp Arg Ala Asp Pro Val Glu Pro Gly Leu Thr Met Tyr
 130 135 140

Lys Gln Lys Arg Leu Val Arg Arg Val Ile Glu Glu Ser Gly Ile Pro
 145 150 155 160

Tyr Thr Tyr Ile Cys Cys Asn Ser Ile Ala Ser Trp Pro Tyr Tyr Asp
 165 170 175

Asn Cys His Pro Ser Gln Leu Pro Pro Pro Leu Asp Gln Leu His Ile
 180 185 190

Tyr Gly His Gly Asp Val Lys Ala Tyr Phe Val Asp Gly Tyr Asp Ile
 195 200 205

Gly Lys Phe Thr Met Lys Val Ile Asp Asp Glu Arg Thr Ile Asn Lys
 210 215 220

Asn Val His Phe Arg Pro Ser Asn Asn Cys Tyr Ser Met Asn Glu Leu

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| Ala | Ser | Leu | Trp | Glu 245 | Asn | Lys | Ile | Ala | Arg 250 | Lys | Ile | Pro | Arg | Val 255 | Ile |
| Val | Ser | Glu | Asp 260 | Asp | Leu | Leu | Ala | Ile 265 | Ala | Ala | Glu | Asn | Cys 270 | Ile | Pro |
| Glu | Ser | Val 275 | Val | Ala | Pro | Ile | Thr 280 | His | Asp | Ile | Phe | Ile 285 | Asn | Gly | Cys |
| Gln | Val 290 | Asn | Phe | Lys | Ile | Asp 295 | Gly | Ile | His | Asp | Val 300 | Glu | Ile | Gly | Thr |
| Leu 305 | Tyr | Pro | Gly | Glu | Ser 310 | Val | Arg | Ser | Leu | Glu 315 | Glu | Cys | Tyr | Glu | Lys 320 |
| Phe | Val | Val | Met | Ala 325 | Ala | Asp | Lys | Ile | His 330 | Lys | Glu | Glu | Thr | Gly 335 | Val |
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<210> 29
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M80676490.ST25

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M80676490.ST25

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<220>
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M80676490.ST25

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M80676490.ST25

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